

At-Home Investigation

You have \$24 to share between 5 people. How could it be done?

Make sure that you show how much each person would receive. Show all your working.

What would happen if you had to share the \$24 between 9 people?

Show how much money each person would receive and explain how you did it.



D14. Division remainders

☐ Sometimes when you divide a number it does not fit entirely into groups. For example, if you divided 16 by 5, you would have 3 groups of five, with 1 left over.

Example 1: Leaving remainders as whole numbers

$$\begin{array}{r} 3 \text{ rem } 1 \\ 5 \overline{) 16} \end{array} \quad \begin{array}{r} 3 \text{ rem } 2 \\ 5 \overline{) 17} \end{array} \quad \begin{array}{r} 3 \text{ rem } 3 \\ 5 \overline{) 18} \end{array}$$

What is the pattern?

Example 2: Expressing remainders as common fractions

$$\begin{array}{r} 3 \frac{1}{5} \\ 5 \overline{) 16} \end{array} \quad \begin{array}{r} 3 \frac{2}{5} \\ 5 \overline{) 17} \end{array} \quad \begin{array}{r} 3 \frac{3}{5} \\ 5 \overline{) 18} \end{array}$$

What is the pattern?

Example 3: Expressing remainders as decimal fractions

$$\begin{array}{r} 3.2 \\ 5 \overline{) 16.10} \end{array} \quad \begin{array}{r} 3.4 \\ 5 \overline{) 17.20} \end{array} \quad \begin{array}{r} 3.6 \\ 5 \overline{) 18.30} \end{array}$$

What is the pattern?

BACKWARDS QUESTION:

Try to work out what the missing numbers are.
Explain how you did it:

$$\begin{array}{r} 3 \text{ rem } 2 \\ 5 \overline{) \quad \quad} \end{array}$$

Division remainders 2

Use what you learned in the previous activity to help you to solve the following problems. You will need to look for where the remainder (left overs) goes.

Example 1: Leaving remainders as whole numbers

$$\begin{array}{r} 3 \text{ rem } 1 \\ 5 \overline{) 16} \end{array} \quad \begin{array}{r} 5 \overline{) 19} \end{array} \quad \begin{array}{r} 5 \overline{) 21} \end{array}$$

What is the pattern?

Example 2: Expressing remainders as common fractions

$$\begin{array}{r} 3 \frac{1}{5} \\ 5 \overline{) 16} \end{array} \quad \begin{array}{r} 5 \overline{) 19} \end{array} \quad \begin{array}{r} 5 \overline{) 21} \end{array}$$

What is the pattern?

Example 3: Expressing remainders as decimal fractions

$$\begin{array}{r} 3.2 \\ 5 \overline{) 16.10} \end{array} \quad \begin{array}{r} 5 \overline{) 19.0} \end{array} \quad \begin{array}{r} 5 \overline{) 21.0} \end{array}$$

What is the pattern?

BACKWARDS QUESTION:

Try to work out what the missing numbers are.
Explain how you did it:

$$\begin{array}{r} 3.2 \\ 6 \overline{) } \end{array}$$

D15. Expressing a remainder

Sometimes different forms are more appropriate for expressing a remainder in division. Examine the following example and use it to help you answer the questions below.

Example: There are 31 children to be divided into 3 groups. How many in each group? Circle the most appropriate answer from those below.

$31 \div 3 =$

10.33

$10 \frac{1}{3}$

$10 \text{ rem } 1$

Answer: 10 remainder 1 is the most appropriate answer because you cannot divide a living child into fractions for different groups. They have to stay as a whole child, therefore as a remainder.

Questions:

For each of the following questions circle the most appropriate answer from the group and justify your choice on the lines below.

3 chocolate bars were split between 2 people. How much chocolate did each one receive?

1.5 bars each

$1 \frac{1}{2}$ bars each

1 bar each and 1 remainder

My Reason:

Gerard ran four 100m races in 54 seconds. How long did he take to run each one?

13.5 seconds each

$13 \frac{2}{4}$ seconds each

13 seconds each, remainder 2

My Reason:

Four people had to divide 9 books between them. How many books did each person get?

2.25 books each

$2 \frac{1}{4}$ books each

2 books each and 1 remainder

My Reason:

Describe how you decided which form was appropriate for each question.

BACKWARDS QUESTION:

Danielle found that she could make $12 \frac{1}{4}$ cookies from each batch of dough. How many batches do you think she cooked to work this out?

D15. Decimals in dividing

Dividing with decimal numbers is very similar to multiplying with decimal numbers, but involves a pattern between the decimals in the dividend and divisors rather than between the terms and answer.

Examples:

$$7 \overline{) 102}$$

$$0.7 \overline{) 102}$$

$$7 \overline{) 10.2}$$

$$0.7 \overline{) 10.2}$$

What is the pattern?

Apply this pattern to answer the questions below.

$$5 \overline{) 615}$$

$$0.5 \overline{) 615}$$

$$5 \overline{) 61.5}$$

$$5 \overline{) 6.15}$$

Check your answers with a calculator. If you are still having difficulty seeing the pattern, go back and look at the examples again. Compare the total number of decimal places in the dividend with the total number of decimal places in the divisors. Show your answers to your teacher before continuing.

Apply this pattern to answer the questions below:

$$560 \div 8 = 70$$

$$5.60 \div 8 =$$

$$56.0 \div \square = 70$$

$$5.60 \div 0.8 =$$

$$56.0 \div \square = 0.7$$

Make up a rule to describe how to know where to put the decimal points when dividing:

BACKWARDS QUESTION:

Put the decimal points into the following equation and fill in the box. What other possibilities are there? Write as many as you can:

$$56 \div \square = 0.07$$

Interleaved practice

Number:

1. Add 1 twelfth to complete the boxes in the top row and write an equivalent fraction below each

Twelfths	$\frac{1}{12}$				$\frac{5}{12}$			$\frac{8}{12}$				
Equivalent fraction		$\frac{1}{6}$			$\frac{10}{24}$							

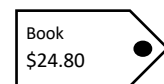
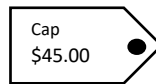
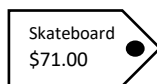
2. Find the answer and show how you worked it out.

$$\boxed{} = \frac{2}{3} - \frac{1}{6}$$

3. Complete the table to write numbers as fractions, decimals and percentages.

Fraction	Decimal	Percentage
$\frac{1}{2}$		
	0.2	
		25%
	0.75	
$\frac{3}{5}$		

4. 28×36 Work out the answer in more than one way.
5. The following items are on sale at 10% off. How much would you expect to pay?

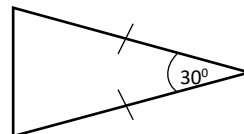


Which combinations of two items could you buy for \$100.00?

Measurement/Geometry:

6. Find 3 prisms in your home and draw them here. What is the same about all of them?

7. What type of triangle is this? Find the missing angles



8. Use the back of this page to draw as many rectangles as you can with a perimeter of 24m. Find at least 2 rectangles with sides that are not whole metres.

Chance/Data:

9. What is the mean height of all the people who live in your house?

D16. Subsets: prime factors

You already know what multiples and factors are and what prime numbers and composite numbers are. In this activity you will learn to find the prime factors for a number.

Prime Factors:

The prime factors of 12 are: 2, 2 and 3

The prime factors of 10 are: 2 and 5

The prime factors of 100 are: 2, 2, 5 and 5

Normal factors:

The factors of 12 are: 1 and 12, 2 and 6, 3 and 4

The factors of 10 are: 1 and 10, 2 and 5

The factors of 100 are: 1 and 100, 2 and 50, 4 and 25, 5 and 20, and 10

Explain what the difference between prime factors and normal factors are. Give some of your own examples:

Find the prime factors for the following numbers:

25

36

14

11

40

120

Explain how you found the prime factors for the numbers above:

BACKWARDS QUESTION:

What number has the following as prime factors: 1, 2, 3, 4, 5, 6 ?

Explain your answer: